



U.S. Fish & Wildlife Service

Anaho Island National Wildlife Refuge

American white pelican *Pelecanus erythrorhynchos*

Information taken from: Knopf, Fritz L. and Roger M. Evans. 2004. American white pelican (*Pelecanus erythrorhynchos*). The Birds of North America Online (A. Poole ed.) Cornell Lab of Ornithology. Retrieved from http://bna.birds.cornell.edu/bna/species/057.

Pictures from Stillwater NWR Complex/Anaho Island NWR files



Adult American white pelican in flight at Anaho Island (photo by Bill Page, FWS volunteer)

Distinguishing Characteristics

- Large white bird with black primary and outer secondary feathers, and large orange bill with distensible pouch.
- Male and female birds are similar in appearance and coloration; males slightly larger than females; both sexes grow breeding horns.
- Wing span 244-290 cm (8-9.5 feet)
- Bill length: males -342 mm (13.5 inches); females -288 mm (11.5 inches)
- Weight: females average 4.54-7.72 kg (10-17 lbs); males average 5.4-9 kg. (12-20) Males heavier than females.
- Height when standing approximately 3 feet
- In early spring/breeding season, mature birds have beak and legs bright orange, head with narrow white to pale yellow plumes, and flattened "breeding horn" on upper bill.
- Function of breeding horn not understood, but may be involved in courtship and often a target of beak jabs by other adults during pair selection and nest establishment.



Adult American white pelicans in breeding plummage (photo by Donna Withers, FWS)

- During summer/post breeding season after chicks have hatched, adult leg color fades, white head plumes replaced with short black feathers, breeding horn falls off
- Juvenile plumage similar to adults, except bill is shorter, and bill and legs are gray to yellowish in color





Juvenile pelican in flight

Adult pelican in flight

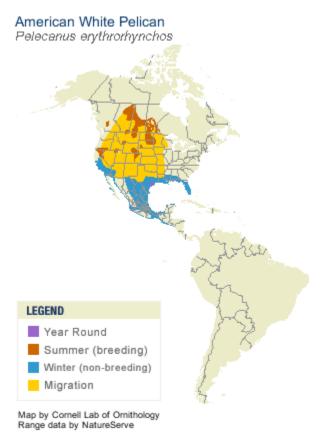
Photos by Bill Page, FWS volunteer

Distribution

- Breeding range:
 - East of the Rockies Central Canada, Minnesota, North and South Dakota, Montana, Wyoming, Colorado
 - West of the Rockies Utah, Nevada, California, Oregon
- Winter range:
 - East of the Rockies Florida, other Gulf States, Texas, central Mexico to Yucatan peninsula
 - West of the Rockies Central California and Southern Arizona south to Baja California, western Mexico

Migration

- Migrate twice annually north in the late winter/early spring to breeding grounds and south in the fall back to wintering range.
- Sexes may migrate together, stopping daily to rest and feed.
- Little is known about details of migration.



Food Habits

- Primary food is fish, although aquatic amphibians and crayfish are taken as available. Will eat what ever aquatic species it can catch.
- Feeds in shallow water, less than 6 feet deep.
- Feeds during the day and at night.
- Diving from water surface or while in flight rarely occurs.
- Fishes alone or cooperatively in a coordinated flock with synchronized bill dipping and wing movements to herd fish together and drive fish to shallower location.



American white pelicans feeding at Stillwater NWR (photo by Donna Withers, FWS)

Diet

- Opportunistically feeding on whatever it can catch; readily changes foraging locations as fishing conditions change due to spawning activities and water levels.
- Breeding adults consume 20-40% of its body weight daily (avg 15 lbs weight = 3-6 lbs fish per day). Approximately 68 kg (150 lbs) of food needed to feed one chick from hatching to fledging.
- Food caught is always swallowed, never carried in pouch.
- At Anaho Island, pelicans feed on fishes of Pyramid Lake during the spawning season; and the shallow wetlands of Lahontan Valley and other areas within 100 miles of Pyramid Lake.
- Size of fish consumed by adults (based on fish tags retrieved on Anaho Island)
 - o Cui-ui 234-650 mm (9-26" length) (1.5 8.5 pounds)
 - \circ Lahontan cutthroat trout 330-698 mm (13-28" length) (1 10 pounds)
 - o Eagle Lake rainbow trout 213-345 mm (2-14" length)
 - \circ Carp 80 700 mm (up to 28" length)
 - \circ Tui chub 80 160 mm (up to 6" length)

Sounds

Pelicans do not have a song, but produce a variety of grunts and squawks.

Movement

- Walks awkwardly on land. Uses wings for balance, teetering from side to side.
- Strong swimmer; sits high on water due to buoyancy.
- Flight is graceful in formation flocks of long lines, Vee, Jay or irregular patterns. Line formation often undulates in a wave. Flies close to the water. Circles up into thermals, soaring upward often out of sight, to reach air current to carry the birds to their destination. Can take off from water or land by hopping and pushing off with feet while flapping wings.

Breeding Behavior

- Early migrants arrive in nearby foraging grounds 3 weeks before pairing
- Courting and pairing occur rapidly once birds arrive at colony.
- Monogamous for the breeding season; pair bond probably established after arrival to nesting grounds and lasts until young birds fledge.
- Nest building begins 1-2 days after onset of courtship/bonding, lasts 3-5 days.
 Nest site is selected adjacent to other pairs in same stage of breeding cycle.
 Since new pairs form each year, specific nest sites are not used each year by the same birds. Neither birds feed during courtship, nest building.
- The nest is a shallow scrape with a low rim of gravel, soil or vegetation raked in with the beak of the sitting adult. Both sexes build the nest and neither leaves the nest site to gather material.



American white pelicans sitting on nests (photo by Donna Withers, FWS)

- Male guards mate and defends site before onset of egg laying, but may leave to forage after first egg is laid.
- Eggs are laid 5-8 days after onset of courtship, 4-5 days after nest building begins; 2 eggs laid 2 days apart. Eggs are chalky, dull, white, elongate ovate, average length/breadth 90 x 56.5 mm. (3.5 x 2 inches)





Adult American white pelican at nest with eggs (photos by Jim Stamates, Low Impact Photography, So. Lake Tahoe, CA)

- Generally, extra eggs are not laid if one or both of eggs are lost or destroyed. Adults abandon nesting effort if both eggs destroyed.
- Eggs are incubated for 30 days, beginning immediately after laying. Parents do not develop brood patch on chest, but incubate the eggs by holding them under their large web feet to keep the eggs in the nest and protect from the ambient weather conditions. Eggs are turned approximately 3 times a day.

- Both parents incubate, taking turns to go out to forage so that the eggs are constantly guarded. Parents switch duty every other day during incubation. Eggs left unattended are rapidly eaten by California gulls.
- Egg hatching takes 1 day. Chicks are without feathers, pinkish, orange skin; bill and pouch grayish white eyes closed (open within day).
 Weigh 110 g (4 ounces). Newly hatched chicks left unattended may be attacked by gulls, or will die within 5 minutes if left un-shaded in summer heat.



Newly hatched American white pelican chick (photo by Jim Stamates, Low Impact Photography, So. Lake Tahoe, CA)

- Once first egg hatches, parents switch duty every day.
- Downy feathers begin to grow by 2 day and complete by 15 days old. Chicks are

unable to regulate body temperature until downy feathers begin to cover body. Juvenile feathers replace down gradually, complete by 33 days old.

- First hatched chick typically harasses younger sibling, pecking at it and preventing it from getting enough food from parent, generally leading to the death of the younger chick.
- Chicks crawl with wings and feet in or near nest for 1-2 weeks. Walk with body off ground by 20-24 days old. Can swim as soon as strong enough to walk to water (26 days). Runs with flapping wings, building strength for flight. Flies by 62-64 days old.



Downy American white pelican chick with parent (photo by Jim Stamates, Low Impact Photography, So. Lake Tahoe, CA)

• Young remain in nest attended by a parent until 17-25 days old (2-3 weeks old), then join into crèches with other chicks as parents begin to leave them unattended, returning only to feed chicks, with parents alternately feeding chicks.



Juvenile American white pelicans gathered into "crèche" (photo by Donna Withers, FWS)

• Parents regurgitate partially digested fish (gruel) onto ground or top of feet, or tip

of lower portion of pouch. When chicks are 10 days old, chick retrieve larger, less digested portions from pouch. Chicks may get feed up to 4 times daily by brooding parent. After parents begin to leave chicks unattended (17-25 days old), they may get feed only once a day. As chicks get older, they reach down into parent's throat for food, often undigested fish.



Juvenile pelican being fed (photo by Jim Stamates, Low Impact Photography, So. Lake Tahoe, CA)

- Small chicks are fed at the nest, as chicks get more mobile, they return to the vicinity of the nest to be fed. Adults will only feed their chick, which wobble heads, open bill, and emit distinctive begging call/grunt until they get fed. Chicks recognize parent as it returns from foraging ground, often running to it eager to be fed
- Each chick needs 227 grams (8 oz or ½ pound) of food per day at 10 days old, 908 grams (2 pounds) at 30 days, and 1816 g (3.5-4pounds) at 55 days old.
- Young begin to fly at 9-10 weeks old, and begin to fly to foraging grounds 1 week or more after successfully flying around nesting grounds.
- Once young leave the nesting grounds, they follow the adults to foraging areas, but must learn to catch their own fish. Once young leave the colony, neither they nor parents return, but move among foraging areas in western U.S. until they begin southward migration.
- Pelicans begin breeding at 3 years old, but may return to breeding colony as a 2 yr old, but do not breed. Not well understood what percentage return to natal colony when mature to breed and successive years.
- On average, 50% of all chicks (1 from each nest) hatched survive first 2 weeks of life. Of those which fledge, 40% may die by the end of the first year. Another 16% die in the 2nd year. 20% die between 3rd and 13th year. Average lifespan 10-20 years, maximum recorded 26 years.

Effect of Human Activity

- American white pelicans are highly sensitive to human intrusions into the breeding colony. Direct human activity in the colony or loud, close use of motor boats near colony can cause the pelicans to take flight.
- Human disturbance will cause immediate desertion, during courtship and early
 incubation. If disturbed during the later incubation period or while tending young
 chicks, adults will leave the nest, exposing eggs and chicks to predation and
 temperature extremes. Adults do not immediately return to nest after disturbance
 is over.
- Incubating and brooding adults signify disturbance by first flapping wings and lifting up off of nest when person gets to close. If person doesn't retreat quickly, birds will fly off from nest, often trampling eggs or chick in effort to get away.

Causes of mortality

- Healthy, adult pelicans have few natural predators. Nesting on predator free islands is essential to survival of chicks.
- Mortality is generally related to lack of sufficient food. If starvation does not directly kill the bird, its immune system becomes weakened such that the emaciated the bird may die of other diseases which are common to pelicans, but would not normally kill a well fed bird.
- Due to they large size and distinctive white coloring, pelicans are often shot illegally. Historically, pelicans were systematically destroyed on breeding grounds by humans blaming the pelicans for declines in local fisheries.
- Because they eat fish, pelicans are subjected to the adverse effects of heavy metal and contaminant poisoning which the fish may contain. Currently, negative impacts on reproduction and general health of pelicans is minimal.
- West Nile virus has caused numerous mortalities of pelicans in the last several years in North Dakota. West Nile virus caused the death of at least one juvenile pelican at Anaho Island in 2006.